

WHAT IS CLAIMED IS:

1. A display apparatus for a mobile terminal for displaying a television video signal in the mobile terminal, comprising:

control means for generating a plurality of commands for execution of a television mode and a communication mode and user data corresponding to a television picture being displayed;

a tuner for receiving a television signal of a selected channel;

a decoder for decoding the television signal received by said tuner to separate it into said television video signal, an audio signal and synchronous signals;

video processing means for, in said television mode, converting said video signal from said decoder into digital video data, processing and storing the converted digital video data on a frame basis and outputting stored video data of a previous frame in a frame period and then outputting said user data and, in said communication mode, stopping operations of said tuner and decoder and outputting said user data from said control means; and

display means having first and second display areas, said display means displaying said frame video data and user data from said video processing means respectively in said first and second display areas in said television mode, and displaying said user data from said video processing means in said first and second display areas in said communication mode.

2. The display apparatus as set forth in claim 1, wherein said video processing means includes:

an analog/digital (A/D) converter for converting said video signal from said decoder into said digital video data;

a format scaler for scaling a size of said video data to a frame size synchronously with said synchronous signals from said decoder;

first to third memories; and

a memory controller for, in said television mode, storing video data of a
5 current frame from said format scaler in said second or third memory at the same
time as outputting video data of a previous frame stored in said third or second
memory, outputting user data stored in said first memory upon completing the
output of said video data of said previous frame and repeating these storage and
output operations and, in said communication mode, storing said user data in said
10 first memory and/or second memory and outputting the stored user data.

3. The display apparatus as set forth in claim 2, wherein said video processing means further includes an on-screen display (OSD) controller for designating, copying and displaying a desired area of said user data stored in said first memory.

15 4. The display apparatus as set forth in claim 3, wherein said video processing means further includes an Inter Integrated Circuit (I2C) controller for transferring channel control data from said control means to said tuner in an I2C communication manner.

5. The display apparatus as set forth in claim 2, wherein:
20 said memory controller is adapted to output video data of a frame being displayed on said display means as a still picture in response to a capture key input; and

said control means is adapted to access said video data being output as said

still picture.

6. The display apparatus as set forth in claim 2, wherein said memory controller is adapted to rotate and output a picture being displayed on said display means in response to a rotate key input.

5 7. The display apparatus as set forth in claim 6, wherein said memory controller is adapted to scale up and output said rotated and output picture.

8. A method for displaying a television video signal in a mobile terminal with a display unit, said display unit having a video data display area and a user data display area, said method comprising the steps of:

10 a) determining in a standby mode whether said mobile terminal is set to a television mode or communication mode;

 b), if said mobile terminal is set to said television mode, controlling a tuner to select a desired television channel;

 c) receiving a television signal over the selected television channel and
15 separating the received television signal into said television video signal, an audio signal and synchronous signals;

 d) converting said separated video signal into video data of a current frame in response to said synchronous signals, storing the video data of the current frame and user data in a memory unit, outputting video data of a previous frame stored in
20 said memory unit to said video data display area of said display unit and then outputting said user data stored in said memory unit to said user data display area of said display unit upon completing the output of said video data of said previous frame; and

e), if said mobile terminal is set to said communication mode, storing user data generated in said communication mode in said memory unit and displaying the stored user data in said video data display area and user data display area of said display unit.

5 9. The method as set forth in claim 8, wherein said step d) includes the steps of:

 d-1) converting said separated video signal into digital video data;

 d-2) scaling a size of said converted digital video data to a frame size
10 synchronously with said synchronous signals to generate said video data of said current frame; and

 d-3) storing said video data of said current frame in a second or third
memory of said memory unit at the same time as outputting and displaying said
video data of said previous frame stored in said third or second memory, outputting
and displaying said user data stored in a first memory of said memory unit upon
15 completing the output of said video data of said previous frame and repeating these
storage and output operations.

 10. The method as set forth in claim 9, wherein said step d-3) includes the
step of, in response to a capture key input, outputting and displaying video data of
a frame being displayed, as a still picture and storing the video data of the displayed
20 still picture.

 11. The method as set forth in claim 9, wherein said step d-3) includes the
step of, in response to a rotate key input, rotating and outputting a currently
displayed picture.

12. The method as set forth in claim 11, wherein said step d-3) further includes the step of scaling up and outputting the currently displayed picture if the rotation is made by 90° or 270° or substantially 90° or substantially 270°.

13. A method for displaying a television video signal in a mobile terminal with a display unit, said display unit having a video data display area and a user data display area, said method comprising the steps of:

a), in a television mode, controlling a tuner to select a desired television channel;

b) receiving a television video signal over the selected television channel and converting the received video signal into digital video data;

c) scaling a size of said video data to a frame size;

d) storing video data of a current frame received over said selected channel and user data corresponding to said selected channel in a memory, outputting video data of a previous frame stored in said memory to said video data display area of said display unit in a frame period and then outputting said user data stored in said memory to said user data display area of said display unit upon completing the output of said video data of said previous frame;

e) determining a communication mode upon generation of a communication command at said step d);

f), if said communication mode is determined to be a data communication mode at said step e), displaying a television picture in said video data display area of said display unit and user data generated in said communication mode in said user data display area of said display unit, respectively, and returning to said step d) if said communication mode is ended; and

g), if said communication mode is determined to be a voice communication mode at said step e), displaying a television picture in said video data display area of said display unit, blocking a television audio signal to perform a voice communication function and returning to said step d) if said communication mode
5 is ended.

14. A method for displaying a television video signal in a mobile terminal with a display unit, said display unit having a video data display area and a user data display area, said method comprising the steps of:

a), in a television mode, controlling a tuner to select a desired television
10 channel;

b) receiving a television video signal over the selected television channel and converting the received video signal into digital video data;

c) scaling a size of said video data to a frame size;

d) storing video data of a current frame received over said selected channel
15 and user data corresponding to said selected channel in a memory, outputting video data of a previous frame stored in said memory to said video data display area of said display unit in a frame period and then outputting said user data stored in said memory to said user data display area of said display unit upon completing the output of said video data of said previous frame;

20 e), upon generation of a screen adjustment command at said step d), rotating and scaling up a currently displayed picture and displaying the resulting picture on said display unit at a full screen size;

f) determining a communication mode upon generation of a communication command at said step e);

25 g), if said communication mode is determined to be a data communication

mode at said step f), displaying a television picture on said display unit, displaying user data generated in said communication mode on a desired position of the displayed television picture in an OSD manner and returning to said step e) if said communication mode is ended; and

- 5 h), if said communication mode is determined to be a voice communication mode at said step f), displaying a television picture on said display unit, blocking a television audio signal to perform a voice communication function and returning to said step e) if said communication mode is ended.

- 10 15. A mobile terminal for performing a television mode and a communication mode, comprising:

 control means for generating a plurality of commands for execution of said television mode and communication mode, user data corresponding to a television picture being displayed and a plurality of commands for execution of said television mode or an OSD mode as a display mode when said communication mode occurs
15 in said television mode;

 a tuner for receiving a television signal of a selected channel;

 a decoder for decoding the television signal received by said tuner to separate it into a video signal, an audio signal and synchronous signals;

 video processing means for, in said television mode, converting said video
20 signal from said decoder into digital video data, processing and storing the converted digital video data on a frame basis and outputting stored video data of a previous frame in a frame period and then outputting said user data, and, if said communication mode occurs in said television mode and said television mode is set as said display mode, blocking said audio signal from said decoder and processing
25 said user data from said control unit at the same time as performing said television

mode and, if said communication mode occurs in said television mode and said OSD mode is set as said display mode, blocking the output of said decoder and processing said user data; and

display means having first and second display areas, said display means
5 displaying said frame video data and user data from said video processing means respectively in said first and second display areas in said television mode, and displaying said user data from said video processing means in said first and second display areas in said communication mode.

16. The mobile terminal as set forth in claim 15, wherein said video
10 processing means includes:

an A/D converter for converting said video signal from said decoder into said digital video data;

a format scaler for scaling a size of said video data to a frame size synchronously with said synchronous signals from said decoder;

15 first to third memories; and

a memory controller for, in said television mode, storing video data of a current frame from said format scaler in said second or third memory at the same time as outputting video data of a previous frame stored in said third or second memory, outputting user data stored in said first memory upon completing the
20 output of said video data of said previous frame and repeating these storage and output operations, and, in said communication mode, if said television mode is set as said display mode, performing said operations and, if said OSD mode is set as said display mode, storing wall paper data in said third memory, storing said user data in said first memory and/or second memory and outputting the stored user data.